

of the satisfactory working of the Ladies' Educational Association, recently decided to open the Faculties of Arts and Law and of Science to women.

Again, there is a very general demand for increased facilities of instruction in engineering and other branches of applied science, which can nowhere be so efficiently met as in connection with a flourishing scientific school like that of University College. Lastly, the numbers of the school have for some years been steadily increasing, and it is not unreasonable to hope that it may soon outgrow its present space. On all these grounds an urgent necessity is now imposed upon the college to undertake a considerable enlargement of its buildings.

Application for tickets should be made to the Jubilee Celebration Committee as early as possible. TALFOURD ELY,
University College, London, June 18 Secretary

Examination of Small Organisms in Water

IN order to examine the minute organisms that inhabit water, such as rotifers, vorticellæ, and kindred microzoons, the arrangement I proposed some years ago in the *Quart. Journ. of Micros. Sci.* will, I believe, be found most convenient. This is to inclose the objective in a brass or other metal tube having its lower end closed by a piece of thin microscopic glass coming close up to but not touching the object-glass. With this protection we can plunge the end of the microscope into a small tank, filled with water, containing the small living organisms, and examine them at our leisure for days or even weeks. The thin glass plate immersed in the water gives us a perfectly steady, flat water-surface, which is not disturbed by any agitation of the surface-water of the tank. Objectives of an inch, half an inch, a quarter of an inch, and even an eighth of an inch focus, may be thus used under water, and all the trouble of catching and ensnaring the small animals is thus avoided. This invention I first employed for the examination of morbid secretions, such as urine. I have since employed it for watching the operations of minute creatures that inhabit water, which may thus be seen in their natural habitat and under normal conditions, which is not the case when they are seen in the usual way, between the two layers of glass on an ordinary microscopic slide. Any optician can make such a tube to screw over the objective of any microscope, and, though it can readily be removed and applied, its presence does not interfere with the use of the microscope in air.

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R. E. DUDGEON

THE LATE MR. HEWITSON

THE memory of the warm-hearted gentleman above-named deserves a passing notice in these columns, for the effect of his labours on at least one department of natural history has been great. William Chapman Hewitson, who died at Oatlands, near Walton-on-Thames, on May 28 last, aged seventy-two years, was by birth a Northumbrian, and, after the somewhat rough education of a Westmoreland school, took up the calling of a surveyor. His passion for natural history was exhibited in very early life, and, after some years' practice of his profession, the fortunate inheritance of a competence, and something more, from an uncle saved him the necessity of pursuing a distasteful vocation, and enabled him to indulge his fancy practically without stint. In 1831, while still engaged in his professional duties, he projected his "British Oology," the first part of which appeared in April, 1831, and the last in 1838. As he himself subsequently wrote:—

"The book was itself as migratory as the birds, the eggs of which are depicted in its pages; many of the plates were drawn at night after a long day of railway surveying in the fields, and the letter-press was printed wherever the author happened to be stationed at the time. There were few collectors to aid him in those days, and it is with a grateful feeling he remembers now the helping hand which was then held out to him by his friend Mr. Yarrell."

Yet the work was a great success. Such beautiful figures of eggs—all drawn on stone by the author—had never before been seen, for his touch was as delicate as his eye

was correct, and great care was bestowed upon the colouring. His zeal for the task he had undertaken, led him with two friends, one of whom was Mr. John Hancock—perhaps the best ornithologist now living—to visit Norway and explore its coasts in quest of those many British birds, of the nidification of which nothing was known except that it was not carried on in these islands. This expedition in 1833 to a country hitherto so little explored by Englishmen as Norway, was no small proof of enterprise, and, with the simultaneous attempt, with a like intent, made in Iceland by Mr. G. C. Atkinson, bore good fruit, not merely in its immediate results, but even long afterwards; for it was doubtless the example of these gentlemen¹ that prompted the subsequent exertions of Wolley, Hudleston, Salvin, Tristram, and others; while the successes in recent years of Alston, Harvie Brown, Danford, and Seebohm, may also be traced to the same cause. The influence has even extended to the United States, as witness the explorations conducted by Kennicott, Macfarlane, and their indefatigable successors under the authority of the Smithsonian Institution. The result has been that the true home of almost every species of bird which inhabits Europe at any time of the year has been discovered, and the same with a large number of those which inhabit North America, and thus, of course, has accrued a great gain to ornithology.

Mr. Hewitson, however, did not pretend to foresee this sequel to his enterprise and that of his friends. His aim was far humbler. In his own words:—

"However unimportant in itself the branch of natural history which I have attempted to elucidate, the beautiful and varied objects which compose it are amongst the first to excite the imagination and call forth in boyhood those feelings, that love for nature, which are inherent in us all; and however the cares or the pleasures of after life may have erased those earlier feelings, there are few who have not one day derived pleasurable emotions from their contemplation, and who do not remember those joyous times when, at the first breaking loose from school, they have hastened to the wood and the hedge-row in search of their painted prize."

The "British Oology" was soon out of print and a second edition was called for, which, under the title of "Coloured Illustrations of the Eggs of British Birds," was begun in 1842 (when the author took the opportunity of publishing a Supplement to his former issue) and finished in 1846, while in 1853—only eleven years later—a third edition was demanded. This, completed in 1856, remains unquestionably the best publication on the subject; for, though the plates were not so carefully coloured as in the second edition, the number of species represented, chiefly owing to the discoveries of Wolley, was largely increased. But in the meanwhile Hewitson's taste had turned towards another department. He had begun with his usual energy that wonderful collection of diurnal *Lepidoptera*, and works in illustration of that group, with which his name will be always associated, and by which it will probably be most widely known. His villa at Oatlands, with its beautiful view and charming garden, was a sight not to be forgotten, to say nothing of the glorious contents of his cabinets. Here he passed the last twenty-five years of his life, or more; seldom leaving home, always glad to welcome a visitor whose tastes agreed with his own, and occasionally returning to his old "flame," when he could thereby assist a friend—as witness some of the plates in the earlier volumes of *The Ibis*. The promulgation and subsequent prevalence of the doctrines of evolution, however, greatly disturbed him; and perhaps the only thing that ruffled his temper was to hear that one naturalist after another had embraced what to him seemed a pestilent heresy.

¹ It is fair to mention that in 1830 Hoy began a series of tours into the Netherlands with the same object, and in 1831 Salmon made an egg-collecting voyage to Orkney and Shetland, but the places they visited bore no comparison in remoteness and difficulty of travelling to those above-mentioned.

So firmly did he stand on the ancient ways that he has been often heard to say—and he may have even expressed the sentiment in as many words in some of his writings—that he could not look into one of his insect-drawers without disgust did he not believe in the direct and independent creation of each individual species. At any rate he never lost an opportunity of avowing his hatred of Darwinism, though his opposition to it made no difference in his feelings towards those of his friends who were Darwinians.

It is understood that before his death he had arranged for the ultimate transfer of his magnificent collection of Butterflies to the British Museum, where, according to the terms of the compact, its present condition is to remain undisturbed for twenty years. Mr. Hewitson, who was buried at Walton-on-Thames, had been a widower for many years and left no children. A portion of his very considerable fortune he is said to have devoted to charitable purposes, but a large portion of the remainder to his old and tried friend, Mr. John Hancock, while his copyrights go to his publisher, Mr. Van Voorst. It is believed also that Mr. Kirby is to make a catalogue of the collection of *Lepidoptera* before it is removed to the British Museum. A. N.

ANDREAS VON ETtingsHAUSEN

WE regret to record the death in Vienna, on May 25, of Baron von Ettingshausen, one of the oldest of European physicists. He was born in Heidelberg, November 25, 1796. After the completion of his academic studies, he entered the philosophical faculty of the Vienna University as privat-docent for physics and mathematics in 1817. Two years later he accepted the professorship of physics in Innsbruck, but was called back in 1821 to Vienna, to the chair of mathematics, which position he exchanged in 1834 for the professorship of physics. In 1852 he accepted the direction of the newly-grounded Physical Institute, completed its organisation, and raised it to its prominent position as a centre of physical investigation. Some years since he was compelled by increasing age to retire from the duties of his professorship, after a half-century of unwearied activity.

As an investigator Ettingshausen was first known by his mathematical contributions. In 1834 he was one of the first to apply Faraday's discovery of electric induction; and the magneto-electric machine devised by him at this time, and bearing his name, marks an important step in the progress of this branch of physics. Of his later researches we would mention those on the movements in homogeneous systems of molecules, on the parallelogram of forces, on the law of isochronism in the vibrations of the pendulum, and on the formulæ for the intensities of reflected and refracted light, in all of which the mathematical element was predominant.

Ettingshausen's literary work was confined chiefly to his "Vorlesungen über höhere Mathematik," which appeared in 1827; his "Lehrbuch der Physik," published in 1844, and to the editorship of the "Zeitschrift für Physik und Mathematik," from 1826-1832.

As a lecturer Ettingshausen was one of the leading celebrities of the Austrian capital. His auditorium was thronged not only by the students but by the educated classes of Vienna, who were attracted by his rare combination of oratorical power and experimental elegance.

In the Physical Institute he rendered services of the greatest value. For a number of years Vienna was unexcelled in the opportunities it offered to young physicists, and the present activity in physical research existing throughout the Austrian universities is undoubtedly due in a great measure to the healthful impulse given by Ettingshausen a score of years since. It is probably to the same source that we can trace the marked mathe-

matical character of the modern school of Austrian physicists, nearly all of whom have been trained under his eye.

Ettingshausen's varied services made him the recipient of numerous decorations, and some years since he was raised by the Emperor into the nobility. He was a leading member of the Vienna Academy of Sciences, which he assisted to found, and for a long series of years its general secretary. His researches appeared chiefly in its *Sitzungsberichte*. He leaves behind him a son, Baron Constantine v. Ettingshausen, the well-known authority on palæontology.

A NEW CRATER ON THE LUNAR SURFACE

WHEN examining the surface of the moon on May 27, 1877, Dr. Hermann J. Klein, of Köln, observed, with his 5½-inch dialyte by Plössl, a great black crater on the Mare Vaporum, and a little to the north-west of the well-known crater Hyginus. He describes the crater as being nearly as large as Hyginus, or about three miles in diameter, and, being deep and full of shadow, and as forming a conspicuous object on the dark grey Mare Vaporum. Having frequently observed this region during the last twelve years, Dr. Klein felt certain that no such crater existed in this region at the time of his previous observations. Dr. Klein communicated his observations to Dr. Schmidt, of Athens, the veteran selenographer, who assured him that this crater was absent from all his numerous drawings of this part of the lunar surface; neither is it shown by Schroter, Lohrmann, nor Mädler, who carefully drew this region with the fine refractor at Dorpat. On one or two subsequent occasions Dr. Klein obtained further observations of this new crater. He found it to be either without a wall or with a very low one, but to be a deep conical depression in the surface. Shortly after sunrise the crater takes the appearance of a dark grey spot, with an ill-defined edge.

In April, 1878, Dr. Klein communicated his observations to the editor of the *Selenographical Journal*, who at once took the proper steps to have this object observed by the members of the Selenographical Society. The day for observing this region was unfortunately cloudy, and no observations could be made in England, but Mr. J. Ward, of Belfast, caught a glimpse of the moon through a temporary break in the clouds. He at once saw the crater in the position assigned to it by Dr. Klein, and described it as being a black crater with a soft edge. The next opportunity for observing this crater was May 9, but the occasion was not favourable, the sun being then high above the horizon of this part of the moon. The day turned out cloudy. Messrs. Backhouse and Neison observed through thin clouds, and saw in the position of the new crater a dark elliptical spot. On May 11 Messrs. Knott, Neison, and Sadler observed in this place a dark ovoid mark or shading. So far, then, the English observations have been perfectly in accord with those of Dr. Klein, although bad weather has rendered it impossible to see the new crater as a crater.

Mr. Neison repeatedly examined and drew this portion of the lunar surface during the years 1871-1875, and discovered a number of minute details in the region where Dr. Klein has seen the new crater. Quite close to this object are a number of much smaller craters, several under a mile in diameter. Several of these are shown by Schroter, Lohrmann, Mädler, and Schmidt. It may be regarded, therefore, as absolutely certain, that previous to 1876 there did not exist on this portion of the lunar surface a deep black crater of three miles in diameter, and it is thus Dr. Klein describes the new object seen by him. Mr. Neison has expressed the opinion that it is most improbable that he could have missed seeing so conspicuous an object as the present dark marking which it is certain exists now in this region. If, therefore, the existence of